

ARSEN'YEV, Lev Borisovich, inzh.; PILATOV, A.I., inzh., vedushchiy red.;
BALASHOV, S.I., inzh., red.

[Experience in building large panel apartment houses] Opyt stroitel'-
stva krupnopanel'nogo zhilogo doma. Moskva, In-t tekhniko-ekon.
inform., 1956. 16 p. (Informatsiya o nauchno-issledovatel'skikh
rabotakh. Tem 31, no.I-56-101) (MIRA 11:2)
(Apartment houses)

BALASHOV, S.

Let's honorably fulfill the tasks of the seven-year plan.
Na stroi.Mosk. 2 no.3:1-4 Mr '59. (MIRA 12:5)

1. Zamestitel' nachal'nika Glavmosstroya.
(Moscow--Construction industry)

KALINYUK, V.V., insh., red.; BALASHOV, S.I., insh., red.; BOGATYKH, Ya.D., insh., red.; GRIBIN, G.P., red.; PAVLOV, S.M., red.; KHUDYAKOV, A.K., red.; PETROVA, V.V., red. isd-va; IPTINKA, G.A., red. isd-va; KOMAROVSKAYA, L.A., tekhn. red.; RODIONOVA, V.M., tekhn. red.

[Construction specifications and regulations] Stroitel'nye normy i pravila. Moskva, Gosstroizdat. Pt.3. Sec.A. ch.7, [Basic principles for organizing-labor (SNiP III-A.7-62)] Organizatsiia truda; osnovnye polozheniia (SNiP III-A.7-62) 1962. 4 p. Pt.3. Sec.V. ch.4. [Regulations for production and inspection of work in stone construction (SNiP III-V.4-62)] Kamennye konstruktsii; pravila proizvodstva i priemki rabot. (SNiP III-V.4-62) 1963. 11 p. (MIRA 16:6)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva. 2. Gostroy SSSR (for Kalinyuk, Gribin).
3. Meshduvedomstvennaya komissiia po peresmotru stroitel'nykh norm i pravil (for Balashov, Pavlov). 4. Nauchno-issledovatel'skiy institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu Akademii stroitel'stva i arkhitektury SSSR (for Bogatykh, Khudyakov).

(Building, Stone)
(Construction industry)

DYKHOVICHENYI, Yury Abramovich, inzh.; KHIL'OV, P.M., inzh.;
 LEVITAN, Ye.P., kand. tekhn. nauk; MAKROKHIN, N.M.,
 inzh.; TARGANSKIY, N.L., inzh.; CHIRIKOV, A.A., prof.,
 doktor tekhn. nauk, rets. agent; BROZEV, A.G., inzh.,
 rets. agent; DUBENIYEV, S.T., inzh., rets. agent; SHUK,
 A.I., inzh., rets. agent; KIRILLOV, Ye.I., inzh.,
 rets. agent; PERMYAKOV, S.I., kand. tekhn. nauk, rets. agent;
 BALASHOV, S.I., inzh., nauchn. red.

[Large-scale fully prefabricated housing construction in
 Moscow] Masovoe polnosobornoe domostroenie v Moskve.

[By] I.U. Dykhovichnyi i dr. Moskva, Strelizdat, 1965.
 275 p. (MIRA 18:4)

BALASHOV, Semen Yegorovich; SPITSYNA, A., red.; SHLYK, M., tekhn. red.

[Inculcating a feeling for the new and progressive] Vospitanie
chuvstva novogo, peredovogo. Moskva, Mosk.rabochii, 1961. 73 p.
(MIRA 14:12)

1. Sekretar' partiynoy organizatsii zavoda "Moskabel'" (for Balashov).
(Efficiency, Industrial)

PARSHIN, A.N.; PEREPOLKIN, A.S.; BALASHOV, S.Yu.

Assembly line for marking out and examining fabric. Tekat.
prom. 18 no.9:42-43 8 '58. (MIRA 11:10)
(Cotton manufacture)

USSR/Cultivated Plants - Potatoes. Vegetables. Melons.

M-3

Abs Jour : Ref Zhur - Biol., No 7, 1958, 29820

Author : Balashov, T.N.

Inst : -

Title : The Influence of the Type of Pistillate Flowers in Melons on the fruit set.

Orig Pub : Tr. po prikl. botan., genet. i selektsii, 1957, 31, No 2, 189-190

Abstract : Melon fruit setting was studied in relation to the type of pistillate flowers: 1) female, 2) monoecious with fertile pollen on the stamens, 3) female with vestigial stamens. It was revealed as a result of the intervarietal pollination of the large melon collection that the percentage of fruit setting in plants with flowers of the first type is nearly twice as great as in the plants having flowers of the other two types (22.6 as compared to 14.5%) A similar result was obtained in 1955 with the cross-

Card 1/2

USSR/Cultivated Plants - Potatoes. Vegetables. Melons.

M-3

Abs Jour : Ref Zhur - Biol., No 7, 1958, 29820

BALASHOV, T.N.

Varietal types of European melons. Trudy po prikl. bot., gen. 1.
sel. 32 no.3:233-247 '59. (MIRA 14:5)
(Melons—Varieties)

BALASHOV, T. N. Cand Agr Sci -- "Study of European melons as ⁹ starting material
for selection." Mos, 1961 (Mos Order of Lenin Agr Acad im K. A. Timiryazev)
(KL, 4-61, 204)

277
- -

БАЛАШОВ, В.

BALASHOV, V.

Centralized repair of equipment. Prom.koop. no.10:26-27 0 '57.

(MIRA 10:12)

1. Ispolnyayushchiy obyazannosti provleniya arteli "Stankoremont,"
Leningrad.

(Repairing)

NECHAYEV, Georgiy Kus'mich; NEMCHUNOVA, O., red.; BALASHOV, V.,
tekhn.red.

[Thermistors in temperature control] Termosoprotivleniia
v temperaturnom kontrole. Kiev, Gos.isd-vo tekhn.lit-ry
USSR, 1959. 205 p. (MIRA 12:8)
(Thermistors)

BALASHOV, V.; FEL'DMAN, A.; PODZOROV, A.

New book on Pneumatic and hydraulic transportation of food industry
by M.M.Korobov. Fern.1 spirt.prom. 31 no.1:44 '65. (MIRA 18:5)

ROZENSON, Isaak Samuilovich; BALASHOV, V.A., red.

[Roving frames] Rovnichnye mashiny. Ivanovo, Ivanovskoe
knishnoe izd-vo, 1963. 54 p. (MIRA 17:5)

PETROVA, Aleksandra Nikolayevna; BALACHEV, V.A., red.

[Sliver delivering machines] Lentochnye mashiny. Ivanovo,
Ivanovskoe knizhnoe izd-vo, 1964. 49 p. (MIRA 17:8)

VANYUSHIN, Aleksandr Fadeyevich; BALASHOV, V.A., red.

[Scutchers] Trepal'nye mashiny. Ivanovo, Ivanovskoe
knizhnoe izd-vo, 1964. 55 p. (MIRA 17:8)

DONSKOY, A.I.V., doktor tekhn. nauk, prof.; DONSKOY, An.V.;
DRESVIN, S.V.; IVENSKIY, G.V.; KUKHTIN, A.M.; LEYBIN,
Yu.V.; MONDRUS, D.B.; SOLOMAKHIN, I.M.; FRUMKIN, A.A.;
BALASHOV, V.A., retsenzent

[High-frequency electrotherapy; a handbook] Vysokochastot-
naya elektrotermiya; spravochnik. Moskva, Mashinostroenie,
1965. 564 p.
(MIRA 18:6)

BUCHIN, Ye.D., kand. tekhn. nauk; BALASHOV, V.D., inzh.

Building approach canals to industrial enterprises. Rech.
transp. 22 no.9:23-24 S '63. (MIRA 16:10)

BALASHOV, V.P.

Mechanizing the removal of wastes from beneath a cupola. Lit.proizv.
no.9:42 S '62. (MIRA 15:11)
(Cupola furnaces—Equipment and supplies)

L 06197-67 FSS-2/ENT(1)/EMP(V)/EMP()/ETI/MP(K) DS/JD/HM

ACC NR: AP6032489

SOURCE CODE: UR/0413/66/000/017/0030/0030

INVENTOR: Alekseyev, F. A.; Balashov, V. A.; Gershonok, M. I.; Grachev, I. M.;
Yegorov, B. A.; Kobyl'nitskaya, M. I.; Kozlov, D. A.; Lifshits, A. I.; Mondrus, D. B.;
Parshin, N. A.; Rashevskiy, A. L.; Rivkin, A. E.; Tal'gren, A. A.; Khansuvarov, A. A.

ORG: none

TITLE: Device for high frequency soldering of lead-acid storage batteries. Class 21,
No. 185368

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 17, 1966, 30 ⁵²/_B

TOPIC TAGS: metal soldering, storage battery

ABSTRACT: An Author Certificate has been issued for a device for high-frequency soldering of lead-acid storage batteries. The device contains an h-f generator with an external tank circuit, a multiloop inductor with open ferrite magnetic circuits, a conveyor with a lifting table, a control desk, and an assembling-soldering former equipped with a magnetic screen fastened on a non-magnetic base. Orig. art. has: 1 figure.

Card 1/2

UDC: 621.352.2:621. 791.357:621.3. 029.5

L 06197-67
ACC NR: AP6032489

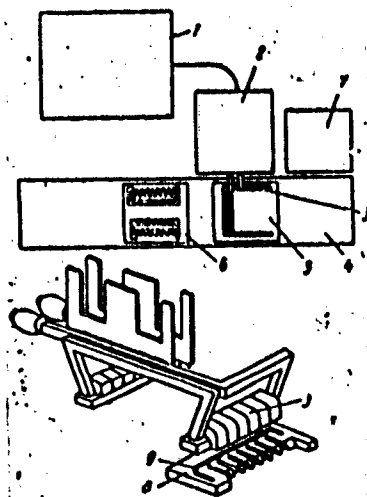


Fig. 1. 1 - H-f generator; 2 - external tank circuit;
3 - inductor; 4 - conveyor; 5 - lifting table;
6 - control desk; 7 - former; 8 - screen; 9 - base.

SUB CODE: 10,13 / SUBM DATE: 24 Mar 65

Card 2/2 afB

L 44193-66 EWT(m)/EWP(w)/T/EWP(t)/ETI JB

ACC NR: AP6015699 (N) SOURCE CODE: UR/0413/66/000/009/0097/0098

38
B

INVENTOR: Balashov, V. A.; Dotsenko, A. M.; Kornilov, A. V.

ORG: none

TITLE: Method of studying the development of fatigue cracks. Class 42,
No. 181361

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 9,
1966, 97-98

TOPIC TAGS: cracking, crack propagation, fatigue crack

ABSTRACT: This Author Certificate introduces a method of studying the development of fatigue cracks by applying a sensing element to the area of possible cracking. The sensing element consists of several parallel conductors with a given law of variation of space between them. The conductors are arranged perpendicular to the possible direction of crack propagation. (In order to obtain diagrams showing the relationship between the length of the propagating crack and the number of load-

Cord 1/2

UDC: 620.178.3

L 44193-66

ACC NR: AP6015699

ing cycles automatically, electric signals proportional to the spaces between the conductors of the sensing element are arranged to be transmitted to the recorder which simultaneously receives the periodic sequence of electric pulses from the cycle counter. The time between these pulses is proportional to a specific number of loading cycles of the test piece (see Fig. 1). Orig. art. has: 1 figure. [Translation] [LD]

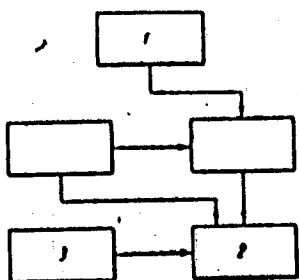


Fig. 1. Device for studying the propagation of fatigue cracks.

1—Sensing element;
2—automatic recorder; 3—cycle counter

SUB CODE: 20/ SUBM DATE: 27Mar65/

Card 2/2

BALASHOV, V.I., podpolkovnik meditsinskoy sluzhby; USANOVA, A.V.

Influenzalike form of food toxinfestation. Voen.-med.shur. no.4:86
Ap '60. (MIRA 1r:1)

(FOOD POISONING)

BALASHOV, V.I.; ARGUNOV, R.S.; SOKOLOV, I.A.; ROGOZHIN, V.A.; USANOVA, A.V.

Outbreak of food toxicoinfection caused by two types of Salmonella.
Zhur.mikrobiol., epid.i immun. 32 no.12:114 D '61.

(MIRA 15:11)

(FOOD POISONING)

(SALMONELLA)

KRAVCHENKO, A.A., starshiy nauchnyy sotrudnik; MIRONOV, B.I.;
BALASHOV, V.I.

Vestibulometry and oxymetry in hypertensives. Trudy .
MONIKI no.5:115-131 '62 (MIRA 16:4)

1. Otorinolaringologicheskaya klinika Moskovskogo oblastnogo
nauchno-issledovatel'skogo klinicheskogo instituta (direktor --
zasluzhennyy deyatel' nauki, prof. I.Ya.Sondul'skiy).
(HYPERTENSION) (VESTIBULAR APPARATUS)
(BLOOD—OXYGEN CONTENT)

KHOLODOK, Ye.D.; NIKIFOROV, I.V.; MAYSURADZE, L.I.; ALEKSANDROV, N.I.;
BALASHOV, V.I.

New methods for gravity surveying under the conditions of a dense
forest. Sbor.luch.rats.predl. pt. 2:4-5 '63. (MIRA 17:5)

1. Ukhtinskoye geologicheskoye upravleniye.

HYERONIMUSKY, A.P.; OF MOLODINA, I.E.; BELYKH, V.V.

New principle of regulating the composition of the medium in the
continuous cultivation of micro-organisms. Mikrobiologiya 34 no.1:
73-78 Ja-P '65. (MIRA 19:7)

1. Institut mikrobiologii AN SSSR.

L 23373-66 EWT(1)/T JK

ACC NR: AP6014018

SOURCE CODE: UR/0220/65/034/001/0073/0078

AUTHOR: Iyerusalimskiy, N. D.--Ierusalimsky, N. D.; Shaforostova, L. D.;
Balashov, V. I.

ORG: Institute of Microbiology, AN SSSR (Institut mikrobiologii AN SSSR)

TITLE: New principle for regulating the composition of media used in continuous culturing of microorganisms

SOURCE: Mikrobiologiya, v. 34, no. 1, 1965, 73-78

TOPIC TAGS: microbiology, cell physiology

ABSTRACT: In flow-type apparatuses based on the chemostat principle, sooner or later a dynamic equilibrium is established between the multiplication of cells and loss thereof in the liquid flowing out. The population and growth rate of the cells, their morphophysiological properties, and composition of the culture fluid become stabilized at some constant level. Any change in the flow rate entails a change in the composition of the medium. Yet for precise physiological investigations it is important to be able to vary only individual external factors, leaving the others unchanged. To achieve this purpose, the authors proposed a new device (here described in detail and illustrated) permitting independent regulation of the amount of several solutions making up the medium. It worked efficiently in continuous culturing of *Bac. megatherium* for 2½ months in a medium consisting of glucose, NaCl, MgSO₄, K₂HPO₄, sodium citrate, ammonium succinate, NH₄Cl, CoCl₂, MnSO₄, and

Card 1/2

UDC: 576.8.093.1

L 23373-06

ACC NR: AP6014018

tap water. The flow rate was maintained throughout at the prescribed level. Such indices of the process as optic density of the culture and content of residual nitrogen and sugar in the culture fluid remained stable at each flow rate. The pH was virtually unchanged. Orig. art. has: 1 figure and 2 tables. [JPRS]

SUB CODE: 06 / SUBM DATE: 01Feb64 / ORIG REF: 002

Cord 2/2

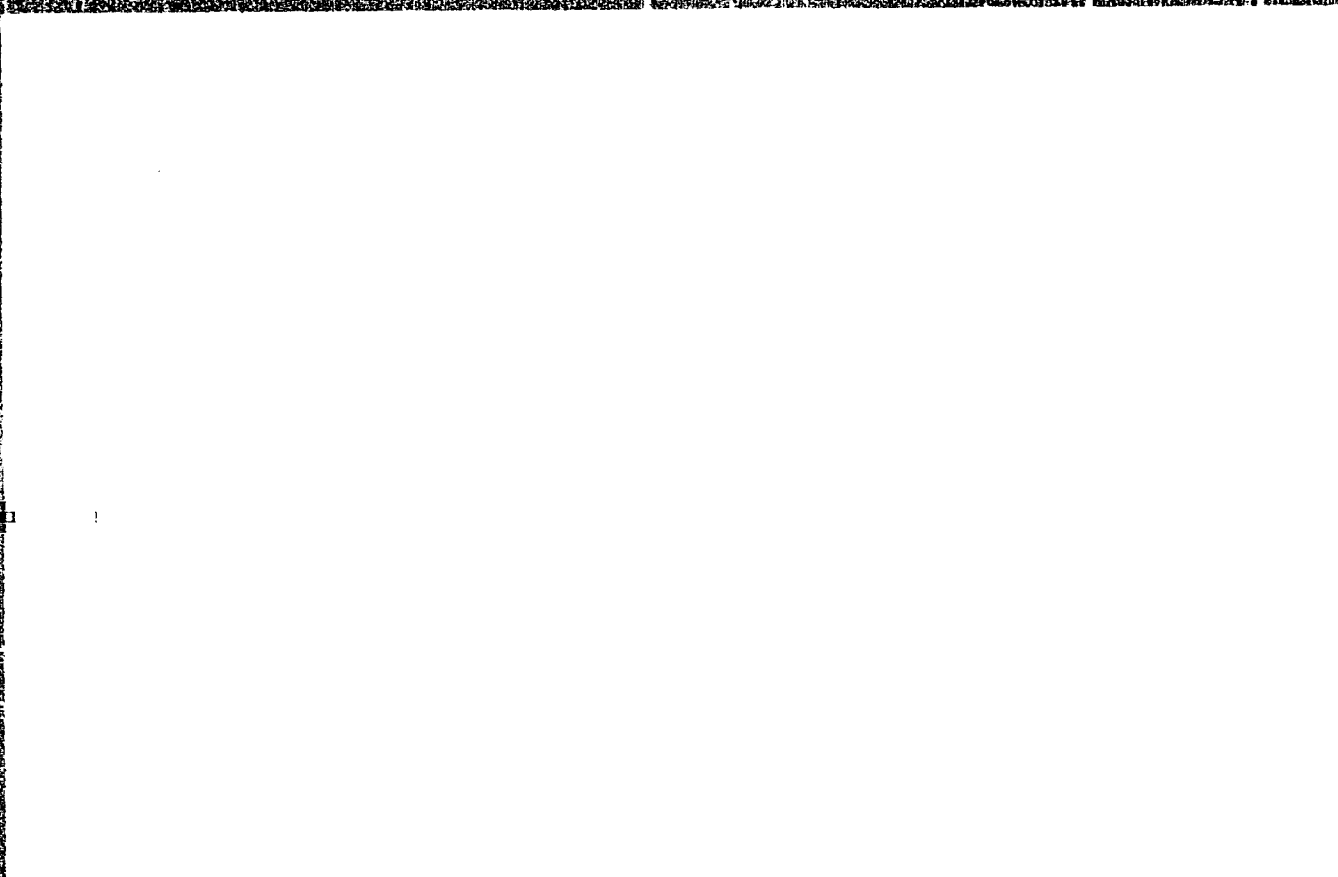
So

KISHLEV, B.P.; BALASHOV, V.L.; KOLCHIN, A.A.; LEBEDEV, V.V.

Separation of barium and strontium by the exchange method in
the system amalgam - solutions. Radiokhimiia 6 no. 1:114-
117 '64. (MIRA 17:6)

"APPROVED FOR RELEASE: Wednesday, June 21, 2000

CIA-RDP86-00513R000103



APPROVED FOR RELEASE: Wednesday, June 21, 2000

CIA-RDP86-00513R000103

"APPROVED FOR RELEASE: Wednesday, June 21, 2000

CIA-RDP86-00513R000103

APPROVED FOR RELEASE: Wednesday, June 21, 2000

CIA-RDP86-00513R000103

KISELEV, B.P.; BALASHOV, V.L.

Temperature dependence of the separation coefficient of strontium
and barium in amalgam exchange. Radiokhimiia 7 no.2:244 '65.
(MIRA 18:6)

PALASHOV, V. M.

PALASHOV, V. M. - "Localization and Removal of Foreign Bodies From Human Tissues." Sub 26 Mar 52, Acad Med Sci USSR. (Dissertation for the Degree of Candidate in Medical Sciences).

SO: Vechernaya Moskva January-December 1952

UOOR/Human and Animal Morphology (Normal and Pathological)
Nervous System - Central Nervous System

2-3

Abs Jour : Ref Zhur - Biol., No 12, 1958, No 55065

Author : Balashov, V.M.

Inst : Moscow Second Institute of Medicine.

Title : The Relationship of Nerve Cells and Capillaries Within the Nucleus of the Facial Nerve.

Orig Pub : Uch. zap. 2-y Mosk. med.in-t, 1957, 4, 96-99

Abstract : Both carotid arteries of 5 cats under narcosis were filled with indiana ink mixed with gelatine. The brain was then histologically examined (the staining was performed according to the method of Nissl). On the expressed vascular network the primary root and the nucleus of the facial nerve (FN) appear. The density of the capillary network in the primary root of FN is significantly smaller than in the nucleus, although it varies in the FN too. The greatest number of capillaries is to be found around the nervous cell bodies, which are arranged in groups. Two groups of capillaries be

Grnd : 1/2

USSR/Human and Animal Morphology (Normal and Pathological)
Nervous System - Central Nervous System

S-3

Abstr Jour : Ref Zhur -- Biol., No 12, 1958, No 55066

distinguished: 1) at a distance of 25μ from the cell body the length of the capillary network amounts to $140-150\mu$ (the average being 285), the capillaries adjoin the cell body for $1/4 - 1/2$ of its circumference, 40 percent of the cells have contact with the cell body, the size of the cell body amounts to $22-40\mu$; 2) at a distance of 25μ the length of the capillary network amounts to $110-180\mu$ (the average being 200), the capillaries adjoin the cell body for $1/4$ of its circumference, 10 percent of the cells have contact with the cell body, the size of the cell body amounts to $13-26\mu$. The length of the capillary network is not always determined by the size of the cell bodies, however, for in the first, as well as in the second group, giant cells have insignificantly short networks while the reverse may be true in others. Therefore, it has been suggested that in the relationship of nerve cells and capillaries within the FN nucleus, functional activity determines the characteristics of form variations.

Cord : 2/2

CHERKAYEV, V.G.; BALASHOV, V.M.

Study of the conditions of hydrogenation of geraniol to citronellol
in a batch-type autoclave. Trudy VNIISNDV no.6:5-14 '63.
(MIRA 17:4)

CHERKAYEV, V.G.; FILYAND, A.I.; SEVARTSEV, V.A.; BALASHOV, V.M.;
KURICHEV, V.A.; MOSHKIN, M.I.

Process of the liquid phase selective hydrogenation of geraniol
in a flow system. Trudy VNIISNDV no.6:128-141 '63. (MIRA 17:4)

BALASHOV, V.N. (Leningrad, Kurakina, 1/3, pavil'on 26, kv. 66); BORISOV,
A.V. (Leningrad, Institutskiy per., d. 5, fl. 7, kv. 62-a)

The 50th anniversary of the Department of Normal Anatomy at the
Leningrad Medical Institute of Sanitation and Hygiene. Arkh.anat.
gist. 1 embr. 35 no.6:110-113 H-D '58. (MIRA 12:1)
(ANATOMY, education,
hist. in Russia (Rus))

GUMANSKIY, G.A.; BALASHOV, Y.M.; ZEMAN, Ya.M.

Using emission radiography for studying the paragenetic relationship between minerals and the composition of ores containing elements with a high atomic number. Geol. rud. mestorozh. no.5:123-124 S-O '60.
(MIRA 13:10)

1. Sredneaziatskiy nauchno-issledovatel'skiy institut geologii i mineral'nogo syr'ya, Tashkent.
(Radiography) (Mineralogy)

BALASHOV, V.N.; POLYAKOV, A.K.

Experimental radiometric assaying in an antimony mine.
Sov.geol. 5 no.1:164-169 Ja '62. (MIRA 15:2)

1. Sredneaziatskiy nauchno-issledovatel'skiy institut
geologii i mineral'nogo syr'ya.
(Ores—Sampling and estimation)
(Antimony ores)

BALASHOV, V.N.; MORGUNOV, V.S.

Gamma-quantum analysis for heavy elements. Biul.nauch.-tekh.
inform.VIMS no.1:70 '60. (MIRA 15:5)

1. Sredneaziatskiy nauchno-issledovatel'skiy institut geologii i
mineral'nogo syr'ya, Tashkent.

(Gamma rays--Industrial applications)
(Ores--Sampling and estimation)

L 53736-65 EFW(c)/EPR/EPA(s)-2/EXT(m)/EWP(1)/EXT(b)/EXT(e) P1-4/PT-4/Pe-4/Pl-7
WM/WM

ACCESSION NR: AP5015562

UR/0286/65/000/008/0119/0119
666.189.211 62
8

AUTHOR: Shkol'nikov, Ya. A.; Polik, B. M.; Karakhanidi, N. G.; Ivanov, P. K.; Rober, F. L.; Ulybyshev, V. V.; Alen'kin, A. T.; Bugrova, N. N.; Simakov, D. P.; Shchipin, I. Ye.; Gur'yeva, Yu. M.; Yefimova, M. I.; Kechayeva, Ye. S.; Yessikhina, K. A.; Ivanova, A. I.; Dayn, E. P.; Mubator, V. G.; Novoyevskaya, Ye. A.; Kukin, Ye. B.; Balashov, V. N.; Gansa, L. B.

TITLE: Glass for glass fibers. Class 32, No. 170369 15

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 8, 1965, 119

TOPIC TAGS: glass, glass fiber

ABSTRACT: An Author Certificate has been issued for a glass suitable for making glass fibers. To increase chemical durability, to prevent corrosion of alloys of aluminum and other light metals, and to improve processability, the glass is formulated to contain: 58-63% SiO₂, 2-4% B₂O₃, 6-8% Al₂O₃, 0.5-1.5% P₂O₅, 4-6% ZrO₂, 6-8% CaO, 12-13% Na₂O, and 1.5-2% K₂O. [6M]

ASSOCIATION: none

Cord 1/2

BALASHOV, V. P.: Master Tech Sci (diss) -- "Investigation of transverse forces in the movement of bridge cranes". Moscow, 1958. 27 pp (Min Higher Educ USSR, Moscow Order of Lenin and Order of Labor Red Banner Higher Technical School im N. E. Bauman), 150 copies (KL, No 4, 1959, 125)

NIKOLAYEVSKIY, G.M., kand.tekhn.nauk; SNESAREV, G.A., kand.tekhn.nauk;
BALASHOV, V.P., kand.tekhn.nauk; AKSENOV, I.P., kand.tekhn.nauk;
NEKLIER, A.O., kand.tekhn.nauk; SPITSYMA, I.O., kand.tekhn.nauk;
ZORIN, Z.M., inzh.; VOROBKOV, G.M., inzh.; IVASHKOV, I.I., kand.
tekhn.nauk; OSIPOVA, L.A., red.isd-va; MODEL', B.I., tekhn.red.

[Design of crane mechanisms and parts of hoisting and conveying
machinery] Raschety kranovykh mekhanizmov i detalei pod"emno-
transportnykh mashin. Isd.2., perer. i dop. Moskva, Gos.nauchno-
tekhn.isd-vo mashinostroit.lit-ry, 1959. 493 p.

(MIRA 13:11)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut
pod"emno-transportnogo mashinostroyeniya.

(Cranes, derricks, etc.) (Hoisting machinery)

(Conveying machinery)

BALASHOV, V.P., kand.tekhn.nauk; TYLIS, I.G.

Using single-rim running wheels for crane trolleys.

Vest.mash. 40 no.9:12-14 8 '60.

(MIRA 13:9)

(Cranes, derricks, etc)

BALASHOV, V.S., red.; MATVEYEVA, A.Ye., tekhn. red.

[Metals; methods of mechanical and service testing]
Metally: metody mekhanicheskikh i tekhnologicheskikh
ispytaniy. Izd.ofitsial'noe. Moskva, Standartgis,
1963. 214 p. (MIRA 16:8)
(Metals--Testing)

BALASHOV, V.S., red.; MATVEYEVA, A.Ye., tekhn.red.

[Coke; classification, specifications and methods of testing] Koks; klassifikatsiia, tekhnicheskie trebovaniia i metody ispytaniia. Izd. ofitsial'noe. Moskva, Gos.izd-vo standartov, 1963. 135 p. (MIRA 16:10)
(Coke--Standards)

BALASHOV, V.S., red.

[Fastenings. Bolts. Screws. Nuts. Rivets] Krepazhnyo
izdeliia. Bolty. Vinty. Gaiki. Zaklepki. Izd. ofitsial'-
noe. Moskva, Izd-vo standartov, 1964. 243 p.
(NIRA 17:8)

BALASHOV, V.S., red.

[Refractories and refractory products] (gneupory i ognestoykiye izdeliya. Izd. ofitsial'noe. Moskva, Izdatvo standartov, 1964. 467 p. (MIRA 17:7)

BELIANIN, Petr Nikolayevich, inzh.; CHERNENKO, Zhan Sergeyevich,
kand. tekhn. nauk; SUTUGIN, G.S., kand. tekhn. nauk,
retsenzent; BALASHOV, V.S., inzh., red.; GRIGORASH, K.I.,
red.

[Aircraft filters and cleaners for hydraulic systems] Aviatsion-
nye fil'try i ochistiteli gidravlicheskikh sistem. Moskva, Ma-
shinostroenie, 1964. 293 p. (MIRA 17:4)

1961, V. 1, no. 1.

[Metal-cutting tools; cutters] Raznitskiy instrument;
raznitsy. Izd. ofitsial'noe. Moskva, Izd-vo standartov,
1961. 78 p. (MIRA 1745)

1. Raznitsy (1923- V. 1, no. 1) Komitet standartov, raznitsy
komitet'nykh priborov.

BALASHOV, V. V.

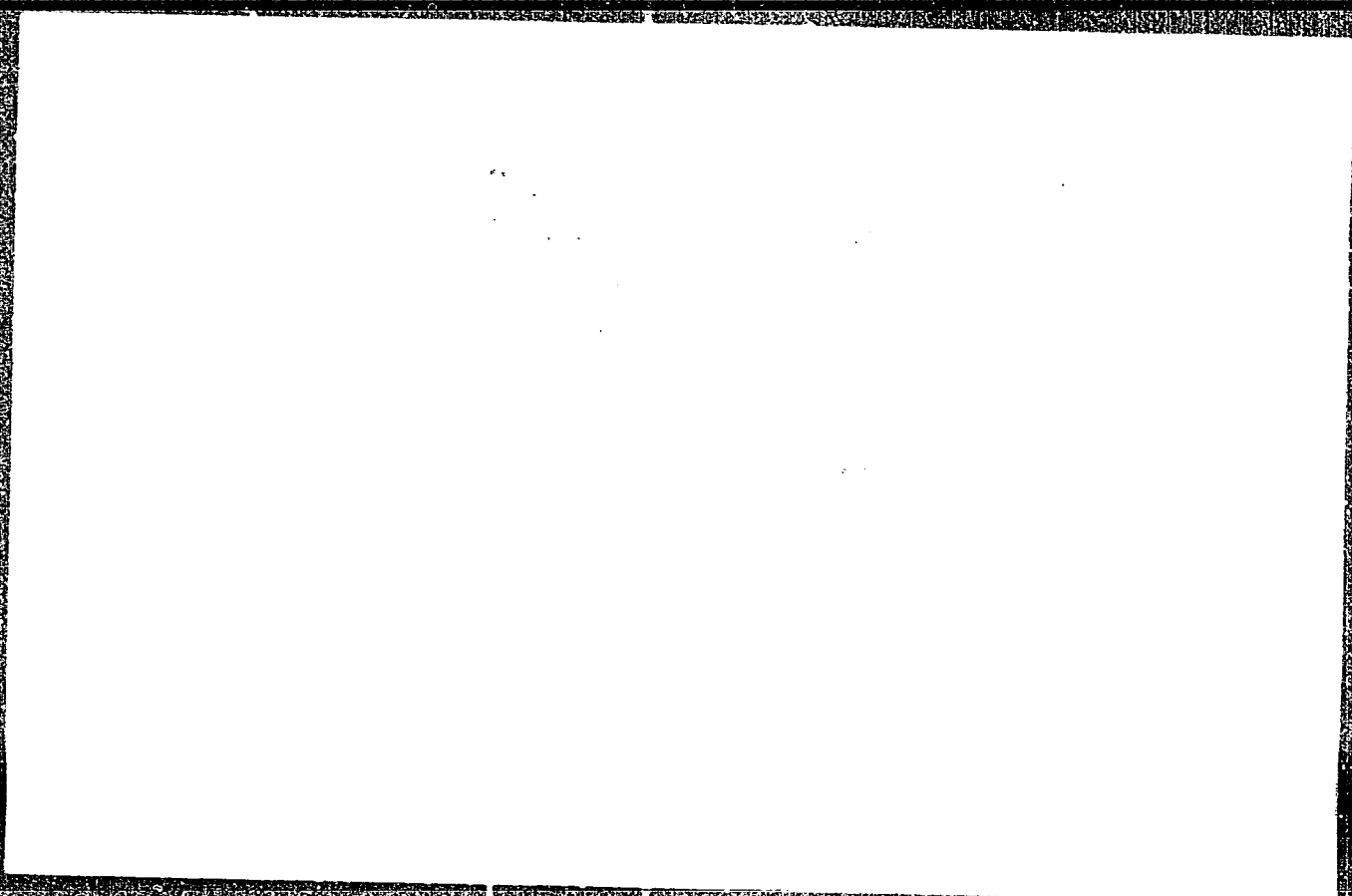
"Nuclear Binding Energies and Excited States in $p^{1/2}$ Shell,"

paper included in the program of the All-Union Conf. on Nuclear Reactions in Medium and Low Energy Physics, Moscow, 19-27 Nov. 1957.

Moscow State University

"APPROVED FOR RELEASE: Wednesday, June 21, 2000

CIA-RDP86-00513R000103



APPROVED FOR RELEASE: Wednesday, June 21, 2000

CIA-RDP86-00513R000103

BALASHOV, V.V., SHIROKOV, Yu.M., and TUMANOV, K.A.

"Application of the Second Quantisation Methods to the Nuclear Shell Theory,"

paper included in the program of the All-Union Conf. on Nuclear Reactions in Medium and Low Energy Physics, Moscow, 19-27 Nov 1957.

Moscow State University and Lebedev Physics Inst. Acad. Sci. USSR

BALASHOV, V.V., DOROFYEV, O.F., KALITKIN, I.M., KAMINSKIY, A.A.,
SHIRKOV, Yu.M. SMIRNOV, Yu.F., and TURANOV, R.A.

"Method of the Light Nuclei Levels Calculation,"

paper submitted at the All-Union Conf. on Nuclear Reactions in Medium and Low
Energy Physics, Moscow, 19-27 Nov 57.

Moscow State Univ. and Lebedev Physics, Inst. Acad. Sci. USSR

BALASHOV, V.V.

PA - 2081

AUTHOR
TITLE

ŠIROKOV, JU.M., BALASHOV, V.V., TUMANOV, K.A.
On a Method of Direct Computation of the Nucleon-Nucleon Interaction
Hamiltonian on Basis of Experimental Values for the Levels of Light
Nuclei (O metode neposredstvennogo vychisleniya gamiltoniana nuklon-
nuklonnogo vzaimodejstviya po eksperimental'nym značenijam urovnej
lechkich jader).

PERIODICAL

Zhurnal Eksperimental'noi i Teoret. Fiziki, 1957, Vol 32, Nr 1,
pp 167-168 (U.S.S.R.)

Reviewed 4/1957

ABSTRACT

Received 3/1957
The here discussed method for the investigation of data concerning the
nucleon-nucleon interaction of nuclei is based on the following con-
ditions. A) Forces in the nuclei are pair-like. B) The average velocity
of the nucleon in the nucleus has the order of magnitude of 0,1 c or less.
Besides, the isotopic invariance of the actual nuclear interaction is as-
sumed and the difference of the proton and neutron mass is neglected.
The wave function of the nucleus of the atomic weight A is divided into
products of A self-functions each, belonging to a frequency of the nucleon
in a threedimensional oscillator well. Into this oscillator representation
of the different nuclei only the SCHROEDINGER-equations are set up in
which not only matrix elements of nuclear interaction but also develop-
ment coefficients of wave functions are known. The coefficients can be
eliminated by putting up the secular equations for the different levels.
In these secular equations only the matrix elements of the pair-like
nuclear interaction are unknown, because self-values of the energy are
known from the experiment. If the development of the wave function con-

Card 1/3

PA - 2081

On a Method of Direct Computation of the Nucleon-Nucleon Interaction Hamiltonian on Basis of Experimental Values for the Levels of Light Nuclei.

verges rapidly, secular equations can be cut off. The system of cut off secular equations obtained in this way is solved with respect to these matrix elements.

The fast convergence of the wave functions of the nucleus according to the oscillator functions guarantees the satisfaction of the condition B. The oscillator problem is the problem of the determination of $W = \langle \Delta p^2 \rangle r_0^2 / \hbar^2 + \langle \Delta x^2 \rangle r_0^{-2}$. Here $\langle \dots \rangle$ denote the average values in the given state, $r_0 = (\hbar / m \omega)^{1/2}$, ω the basic frequency of the oscillator. Computations for He^4 with $\Delta x = 1, 2 \cdot 10^{-13}$ cm lead to the value $W \sim 1$. For heavier nuclei up to oxygen analogous computations furnish the value $W \sim 3$. In the analysis of wave functions of the nuclei H^3 , He^3 , He^4 , only the original state of the oscillator with $n = 0$ plays an important part, in the case of heavier nuclei up to oxygen only the first two states with $n = 0$ and $n = 1$ are important. The contribution of other states excited is insignificant. The kinetic energy of the nucleon is computed as a whole from the complete Hamiltonian. The Hamiltonian in the center of mass system is then obtained and the self values of the Hamiltonian are then the energy levels of the nucleus. This Hamilton-operator \hat{H} is given explicitly and is discussed. Finally, numerical results are given in the roughest approximation ($n = 0$).

Card 2/3

PA - 2081

On a Method of Direct Computation of the Nucleon-Nucleon Interaction
Hamiltonian on Basis of Experimental Values for the Levels of Light Nuclei.

ASSOCIATION Moscow State University

PRESENTED BY

SUBMITTED

AVAILABLE Library of Congress

Card 3/3

BALASHOV, V. V.: Master Phys-Math Sci (diss) -- "On the theory of interaction of shell nucleons in light nuclei". Moscow, 1958. 7 pp (Moscow State U im M. V. Lomonosov), 150 copies (KL, No 6, 1959, 123)

21(8)

SOV/56-36-2-41/63

AUTHORS: Balashov, V. V., Tulinov, A. F.

TITLE: On the Problem of Collective Effects in Light Nuclei (K vopr. -
su o kollektivnykh effektakh v legkikh yadrakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
Vol 36, Nr 2, pp 615 - 616 (USSR)

ABSTRACT: It is interesting to discuss some general considerations concerning the collective effects in nuclei which are not connected with the concretization of the mechanism of collective intensification of the electric quadrupole transitions and, therefore, with the addition of any further parameters. In contrast to the one particle operator, the operator of the quadrupole transition (which is connected with a collective motion) contains only a scalar component with respect to isotopic spin. There are therefore no collective effects in the E2 transitions with exchange of the isotopic spin, and it may be assumed, that the shell theory will give the correct values of the probabilities of these transitions. The verification of this statement is especially interesting in the region of light nuclei. Within the

Card 1/2

On the Problem of Collective Effects in Light Nuclei

SOV/56-36-2-41/63

p-shell, only a small number of pure E2-transitions with variation of the isotopic spin can be observed. The increase of the probability of the quadrupole transitions found is due to collective effects and such effects are actually excluded in transitions with variation of isotopic spin. Unfortunately, experimental data are available only for the case $^{16}\text{O}(C^{12})$. Finally, the authors suggest the following experimental investigations: a) Measurement of the time τ for the transitions $3.58 \rightarrow 1.74$ Mev and $4.77 \rightarrow 1.74$ Mev in B^{10} . This can be carried out either according by the method of the Doppler shift (for example, in the reaction $C^{12}(d,\alpha)B^{10}$) or by measuring the relative probabilities of the transitions from the states 3.58 and 4.77 Mev to the lower states. b) Measurement of the relative probabilities in the mixed M1+E2 transitions, especially in the transition $17.63 \rightarrow 2.9$ Mev in the Be^8 nucleus. There are 1 table and 12 references, 2 of which are Soviet.

ASSOCIATION:

Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University)

SUBMITTED:
Card 2/2

June 27, 1958

24(5)

AUTHOR:

Balashov, V. V.

SOV/56-36-4-25/70

TITLE:

The Nuclear Forces and the Levels of Li-Isotopes
(Yadernyye sily i urovni izotopov Li)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
Vol 36, Nr 4, pp 1123-1128 (USSR)

ABSTRACT:

The present paper suggests an improvement of the intermediate coupling model of the nuclear shell theory by taking into account spin-orbit interaction between the nucleons. It is shown that by investigation of two interacting nucleons according to the method developed by Talmi (Ref 10) it is possible to characterize the potential $V_{s1}(1,2) = f(1,2)(\vec{S}_{12} \vec{L}_{12})$ (\vec{S}_{12} and \vec{L}_{12} denote total spin and orbital momentum of the relative motion of two nucleons) by means of two independent parameters: by α_1 and α_2 . For the P- and D-state the following holds:

Card 1/3

$$\langle {}^3P_0^{T=0} | V_{s1}(1,2) | \rangle = 2\alpha_1$$

$$\langle {}^3P_1^{T=0} | V_{s1}(1,2) | \rangle = \alpha_1$$

$$\langle {}^3D_0^{T=0} | V_{s1}(1,2) | \rangle = 3\alpha_2$$

$$\langle {}^3D_1^{T=0} | V_{s1}(1,2) | \rangle = \alpha_2$$

The Nuclear Forces and the Levels of Li-Isotopes

SOV/56-36-4-25/70

$$\langle {}^3P_2'' | v_{s1}(1,2) | \rangle = -\alpha_1, \quad \langle {}^3D_2' | v_{s1}(1,2) | \rangle = -2\alpha_2$$

For the amount of the spin-orbital splitting-up of the interaction between the p-nucleon and the $s_{1/2}^4$ -shell it holds that $\Delta(p_{1/2}, p_{3/2}) = 9/2 \alpha_1$ (9). The parameters α_1, α_2 and Δ are then calculated for the levels of Li^6 and Li^7 (Tables 1-3), and in diagrams $E(\alpha_1)$ the curve families for various α_1 -values are represented (Figs 2-4). Figure 5 shows a level scheme. Summary: Consideration of the pairwise spin-orbit interaction between nucleons in a not filled-up shell leads to a considerable variation of the parameters describing the central interaction of nucleons. From calculations it follows that a composition of central and two-particle spin-orbital forces gives good approximation of the interaction of nucleons in the nucleus. A level analysis of the lithium isotopes gives the following values for the parameters of pairwise nucleon interaction (in Mev):

Card 2/3

The Nuclear Forces and the Levels of Li-Isotopes

SOV/56-36-4-25/70

$$\Delta = 1.98, \alpha_1 = 0.43, \alpha_2 = 0.23, F_1 = -3.12, F_2 = -7.18, \\ F_5 = -1.28, F_6 = -3.55.$$

The parameter values of $\Delta(p_{14}, p_{14})$ and α_1 agree well with the equation (9) obtained by means of oscillator functions for s- and p-nucleons. The relation $F_1/F_2 = F_5/F_6$, which holds for $\alpha_1=0$ and $\alpha_2=0$, is not in accordance with the above parameter values, which indicates the existence of various radial dependences of nuclear forces with different exchange character. The author finally thanks Yu. M. Shirokov for his constant interest and for his advice, and he further thanks A. A. Samarskiy and V. Ya. Gol'din for their advice in connection with calculations. There are 5 figures, 3 tables, and 13 references, 4 of which are Soviet.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute for Nuclear Physics of Moscow State University)

Card 3/3

SUBMITTED: September 11, 1958

24(5)

AUTHOR:

Balashov, V. V.

SOV/56-36-5-12/76

TITLE:

Consideration of Phase Shift in the Transition
From "Particles" to "Holes" in the Theory of Nuclear Shells
(Uchet fazy funktsii pri perekhode ot "chastits" k
"dyrkam" v teorii yadernykh obolochek)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
Vol 36, Nr 5, pp 1387-1392 (USSR)

ABSTRACT:

In an earlier paper (Ref 1) Balashov, Tumanov and Shirokov used the method of second quantization for the purpose of calculating the matrix elements of the single-particle-(F) and two-particle-(G) operators for the general case of mixed "particles"- and "hole"-configurations of the nucleons in the nucleus. In the present paper several further formulas are derived for the matrix elements of the F-operators for "hole"-configurations, which were not obtained by reference 1. They are used for investigating the connection between the parental coefficients corresponding to the beginning and the end of a nuclear shell. For the purpose of setting up the wave function for a nucleon state that corresponds to a filled shell,

Card 1/3

Consideration of Phase Shift in the Transition
From "Particles" to "Holes" in the Theory of Nuclear Shells

SOV/56-36-5-12/76

it is possible to operate with the representation of spatial and isotopic rotation groups with $J = 0$ and $T = 0$ and the symplectic group with $(\sigma) = (00)$. This state may be considered to be a particle "vacuum", and the nucleon state in which only one particle is lacking for the closed shell, may be considered to be a "hole" in the "vacuum" state. Transition from the nucleon annihilation operator b in the state j, m, τ to the hole-production operator is described by $b(j, m, \tau) = (-1)^{j+m} (-1)^{\frac{1}{2}+\tau} C^+(j, -m, -\tau)$. By making use of the results obtained from reference 1, transition of the "particle" function to the "hole" function, and by means of the derived matrix elements and the parental coefficients, the shell configurations are described, and the problem of phase shift variation in transition from "particle" to "hole" is investigated. Selection rules concerning the symplectic group are formulated for the case of electromagnetic nuclear transitions in the case of jj -coupling. In an appendix the parental coefficients for two different

Card 2/3

Consideration of Phase Shift in the Transition
From "Particles" to "Holes" in the Theory of Nuclear Shells

SOV/56-36-5-12/76

configurations are tabulated. The author finally thanks
V. G. Neudachin for valuable discussions. There are 2
tables and 10 references, 3 of which are Soviet.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo
universiteta (Institute of Nuclear Physics of Moscow
State University)

SUBMITTED: September 11, 1958

Card 3/3

BALASHOV, V.V.

"Nuclear Shell Model"

report submitted for the USSR Conference on Nuclear Reactions at Low and Intermediate Energies, Moscow, 21-28 July 1960.

BALASHOV, V.V.

On the He^7 isotope. Atom.energ. 9 no.1:48-49 J1 '60.
(Helium—Isotopes) (MIRA 13:7)

S/048/61/025/002/001/016
B117/B212

AUTHORS: ~~Balashov, V. V.~~ Neudachin, V. G., and Smirnov, Yu. F.

TITLE: Structure of light nuclei

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25,
no. 4, 1961, 170-188

TEXT: The present paper was read at the 10th All-Union Conference on Nuclear Spectroscopy (Moscow, 1960), and also at the 11th Annual Conference on Nuclear Spectroscopy (Riga, January 25 to February 2, 1961). The authors summarize the progress in the development, concerning the theory of light nuclei and mainly deal with two aspects which underly their description of the theory of light nuclei: 1) Utilization of a modern shell model to calculate the characteristics of ground states and least excited states; 2) The question of consistency of various models of light nuclei. The first chapter deals with the manybody aspects of the shell theory. A theoretical argumentation of the shell model is not given; the model is only treated as a semi-empirical method providing a simple explanation of experimental data, and at the same time furnishing a means for predicting lower-excited nuclear

Card 1/5

Structure of light nuclei

S/048/61/025/002/001/016
B117/B212

states. The authors discuss various elementary questions concerning the formalism of the shell model, i.e., introducing concepts and symbols which are generally used in publications on this subject, but have not yet entered the Russian literature. The first chapter deals with the following questions: Construction of wave functions belonging to the shell theory (Refs. 2-7), application of the shell model to calculate energy spectra of light nuclei (Refs. 5-8), electromagnetic moments and transitions in light nuclei (Refs. 16-22). The second chapter deals with the alpha association and shell model (Refs. 2, 23-28); it is shown that the alpha-particle model of nucleus and the shell model are much closer interrelated than has hitherto been assumed, and that they do not exclude each other. In chapter three ("Collective motion and shell model"), the authors mention papers (Refs. 29-40) which deal with the creation of new and more complicated models. They had to be developed from the collection model (drop model) and the shell model, since the range of application of the two aforementioned models alone is rather narrow. Finally, the authors deal with a number of experimental problems. The solution of such problems has become urgent since the theory of light nuclei develops steadily and rapidly. In order to clarify the characteristics of nucleon interactions it is, above all, necessary to

Card 2/5

Structure of light nuclei

S/048/61/025/002/001/016
B117/B212

perform a systematic investigation of light nuclei. This is necessary for a precise explanation of the shell model and a determination of its relation to other models. At first, such an investigation might be limited to a small number of nuclei, but the results obtained should be very complete. From a theoretical point of view, and regarding the present experimental possibilities, the nuclei at the end of the p-shell with $A = 13, 14$ and 15 , and also the B^{10} nuclei, up to now already thoroughly enough studied, are of special interest. According to the authors, the following special problems seem to be promising: 1) Levels in Li^7 ; 2) calculation of levels in Li^7 ; 3) nature of the excited 0^+ levels in C^{12} , O^{16} , Ne^{20} , and other nuclei; 4) investigations of E2-transitions near Mg when T is changed; 5) experimental spectrometric problems which are of interest for the theory of photo-nuclear reactions (Ref. 44): a) stripping (d,p) and (d,n) reactions forming single-body levels of the final nucleus; b) inverse stripping (p,d) reactions during which the nucleon is "pulled out" from the inner shell of the nucleus, i.e., Mg^{24} etc.; c) elastic proton scattering on up to 8-Mev nuclei. Ref. 45 brings an example for such experiments. G. Lipkin, Yu. M. Shirokov, K. A. Tumanov, V. Yu. Gonchar, Ye. V. Inopin, and S. P. Tsytko are mentioned. There are 2 tables and 45 references: 11 Soviet-bloc.

Card 3/5

Structure of light nuclei

S/048/61/025/002/001/016
B117/B212

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki
Moskovskogo gos. universiteta im. M. V. Lomonosova
(Scientific Research Institute of Nuclear Physics of Moscow
State University imeni M. V. Lomonosov)

1 Ядро	J, T	Классифика- ция в схеме LS 2	Классифика- ция в схеме jj 3	Ядро 1	J, T	Классифика- ция в схеме LS 2	Классифика- ция в схеме jj 3
He ³	$\frac{1}{2}, \frac{1}{2}$	$p[1]:^{11}P_{1/2}$	$P_{1/2}^1: \frac{1}{2}, \frac{1}{2}$	B ¹¹	$\frac{1}{2}, \frac{1}{2}$	$p^{11}[43]:^{11}P_{1/2}$	$P_{1/2}^1: \frac{1}{2}, \frac{1}{2}$
He ⁴	0, 1	$p^2[2]:^{11}S_0$	$P_{0,0}^2: 01$	C ¹²	0, 0	$p^{12}[44]:^{11}S_0$	$P_{0,0}^2: 00$
Li ⁶	-1, 0	$p^2[2]:^{11}S_1$	$P_{0,0}^2: 10$	C ¹³	$\frac{1}{2}, \frac{1}{2}$	$p^{13}[44]:^{11}P_{1/2}$	$P_{1/2}^1: \frac{1}{2}, \frac{1}{2}$
Li ⁷	$\frac{1}{2}, \frac{1}{2}$	$p^2[3]:^{11}P_{1/2}$	$P_{1/2}^2: \frac{1}{2}, \frac{1}{2}$	N ¹⁴	1, 0	$p^{14}[42]:^{11}S_1$	$P_{0,0}^2: 10$
He ⁹	0, 0	$p^2[4]:^{11}S_0$	$P_{0,0}^2: 00$	N ¹⁵	$\frac{1}{2}, \frac{1}{2}$	$p^{15}[44]:^{11}P_{1/2}$	$P_{1/2}^1: \frac{1}{2}, \frac{1}{2}$
He ¹⁰	$\frac{1}{2}, \frac{1}{2}$	$p^2[4]:^{11}P_{1/2}$	$P_{1/2}^2: \frac{1}{2}, \frac{1}{2}$	O ¹⁶	0, 0	$p^{16}[44]:^{11}S_0$	$P_{0,0}^2: 00$
Be ¹⁰	3, 0	$p^2[42]:^{11}D_2$	$P_{0,0}^2: 30$				

Legend to Table 1:
1) Nucleus; 2) class-
ification in the LS-
scheme; 3) classifi-
cation in the jj-
scheme.

Tab. 1

Card 4/5

Structure of light nuclei

S/048/61/025/002/001/016
B117/B212

1 Ядро	Конфигу- рация 2	T, J	3 "одночаст	4 μij	1 Ядро	Конфигу- рация 2	T, J	3 "одночаст	4 μij	Эд.к.
Li ⁷	(p _{1/2}) ³	1/2, 3/2	3,79	3,04	F ¹⁹	(d _{3/2}) ³	1/2, 3/2	2,79	2,79	
Be ⁹	(p _{1/2}) ⁻³	1/2, 3/2	-1,91	-1,18	Mg ²⁵	(d _{3/2}) ³	1/2, 3/2	-1,91	-0,84	
	(p _{3/2}) ⁻¹		3,79	3,79		(d _{3/2}) ⁻¹		4,79	4,79	
B ¹¹	(p _{1/2}) ³ (p _{3/2}) ⁰	1/2, 3/2	3,79	3,04	Al ²⁷	(d _{3/2}) ⁻³ (d _{5/2}) ³	1/2, 3/2	4,79	3,52	
C ¹³	(p _{1/2}) ¹	1/2, 1/2	0,64	0,64	Cl ³⁵	(d _{3/2}) ³	1/2, 3/2	0,13	0,26	
N ¹⁵	(p _{1/2}) ⁻¹	1/2, 1/2	-0,28	-0,28	Cl ³⁷	(d _{3/2}) ³	3/2, 3/2	0,13	0,13	
O ¹⁷	(d _{3/2}) ¹	1/2, 3/2	-1,91	-1,91	Sc ⁴⁵	(f _{7/2}) ³	3/2, 3/2	5,79	5,10	

Legend to Table 2: 1) Nucleus; 2) configuration;
3) "single particle

Card 5/5

S/056/61/041/006/039/054
B109/B102

AUTHORS: Balashov, V. V., Shevchenko, V. G., Yudin, N. P.

TITLE: Giant resonance in Pb^{208} photodisintegration

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41,
no. 6(12), 1961, 1929-1933

TEXT: The cross section for the dipole absorption of γ -quanta by Pb^{208} nuclei has been calculated by using the shell model. The application of the diagonal approximation (taking into account only the diagonal terms of the interaction of the particle with a "hole") to the photodisintegration of Pb^{208} does not bring about an essential change in comparison with the single-particle model of Wilkinson. In this approximation, the curve of dipole absorption is characterized by a wide maximum in the range of 5.5 - 8 Mev (experimental range 13.5 - 14 Mev). The energy levels $J = 1^-$ and the corresponding wave functions were calculated by diagonalizing the interaction matrix, using the single-particle states shown in Table 1. The position of the single-particle levels was determined in agreement Card 1/1.

Giant resonance in Pb^{208} ...

S/056/61/041/006/039/054
B109/B102

with experimental data on the neighboring nucleus and extrapolating calculations according to the single-particle model. Assuming δ -interaction between the nucleons $V_{12} = -g[(1 - \alpha) + \alpha \vec{\sigma}_1 \cdot \vec{\sigma}_2] \delta(\vec{r}_1 - \vec{r}_2)$ and an interaction amplitude of 1220 Mev. δ (see W. W. True, W. T. Prinkston, J. C. Carter. Bull. Am. Phys. Soc., 5, 243, 1960), the values given in Table 2 and Fig. 2 will be obtained for $\alpha = 0.135$. A relevant calculation with the Wigner force resulted in values which deviated considerably from experimental data. It is concluded that a consideration of the residual interaction in Pb^{208} leads to an isolated "dipole state" whose position corresponds to the experimental energy value of giant resonance. The occurrence of this state is caused by the high density of the single-particle dipole states in the nucleus under consideration. It is pointed out that high density of single-particle levels is not a sufficient condition for the occurrence of an isolated and strongly correlated dipole state (Brown-Bolsterli effect). It is assumed that the giant resonance of photodisintegration can be explained by the use of a shell model and by taking into account the mixing of configurations. The

Card 2/2

Giant resonance in Pb^{208} ...

S/056/61/041/006/039/054
B109/B102

results of investigations of Pb^{208} are believed to be valid for any other nuclei. There are 3 figures, 2 tables, and 7 references; 1 Soviet and 6 non-Soviet. The four most recent references to English-language publications read as follows: G. Brown, M. Bolsterli. Phys. Rev. Lett., 2, 472, 1959; E. G. Fuller, E. Hayward. Intern. Conference on Nucl. Structure, 1960, Kingston, Ontario, Canada; J. M. Soper (to be published); G. E. Brown, L. Castillejo, J. A. Evans. Nucl. Phys., 22, 1, 1961; W. W. True, W. T. Prinkston, J. C. Carter. Bull. Am. Phys. Soc., 5, 243, 1960.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University)

SUBMITTED: July 12, 1961

Table 1. Energies of "zeroth approximation". Legend: (1) single-particle proton states; (2) single-particle neutron states.

Table 2. Legend: (1) σ_{total} mb. Mev.

Card 3/0 23

BALASHOV, V.V.; BKLYAYEV, V.B.; KRAMZHYAN, R.A.

[Calculation of two-nucleon correlations in the theory of μ -capture by light nuclei] Uchet dvunuklennykh korrelyatsii v teorii μ -zakhvata legkimi iadrami. Dubna, Ob"edinennyi in-t iadernykh issledovani, 1962. 11 p. (MIRA 15:2)
(Nuclear reactions) (Mesons)

8/048/62/026/012/002/016
B117/B186

AUTHOR: Balashov, V. V.

TITLE: The nature of collective dipole excitation of atomic nuclei

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya,
v. 26, no. 12, 1962, 1459-1469

TEXT: A survey is made of the results of work started two years ago in the field of dipole excitation theory at Moskovskiy universitet (Moscow University) with the collaboration of N. P. Yudin, V. G. Shevchenko, R. A. Eramzhyan, V. M. Chernov (MGU), K. V. Shitikova (Ural'skiy politekhn. in-t. (Ural Polytechnic Institute)), V. B. Belyayev and B. N. Zakhar'yev (OIIAI). The results showed that the usual concepts resulting from investigations of nuclear properties suffice to present a microscopic picture of nuclear dipole excitation. Dipole excitation can be explained in terms both of a collective model and of a shell model. The dipole-dipole component in nucleon interaction acquires particular significance when dipole states are set up in nuclei, because of the shift it causes in the giant resonance which is large compared to the single-particle value. The width of the Card 1/2

The nature of collective dipole ...

S/048/62/026/012/002/016

B117/B186

giant resonance depends on the "friction" occurring in dipole excitation. There are three causes of the latter: 1) disturbed degeneracy of the single-particle levels (spin-orbit splitting, anharmonic potentials); 2) all the multipoles having residual interaction, with the exception of $\lambda = 1$, particularly the quadrupole-quadrupole interaction; 3) deviation of the dipole-dipole interaction from the ideal form $(\vec{r}_1 \vec{r}_2) (\vec{r}_1 \vec{r}_2)$. The generator

method is proposed as a simple means of quantitatively describing the characteristic features of giant resonance (V. V. Balashov, Zh. eksperim. i teor. fiz., 42, no. 1, 275 (1962); K. V. Shitikova, Zh. eksperim. i teor. fiz., 42, 868 (1962)). This method can also be used to describe other collective excitations. This paper was presented at the 12th Annual Conference on Nuclear Spectroscopy held in Leningrad from January 26 to February 2, 1962. There are 1 figure, 3 tables, and 23 references.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gos. universiteta im. M. V. Lomonosova
(Division of Physics of the Moscow State University imeni M. V. Lomonosov)

Card 2/2

34017

S/056/62/042/001/041/048
B102/B108

24 6200

AUTHOR: Balashov, V. V.

TITLE: Relationship between the collective and shell descriptions of dipole excitations of atomic nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 1, 1962, 275 - 281

TEXT: The collective model of A. B. Migdal (ZhETF, 15, 81, 1945) is modified and generalized by introducing shell model representations which permit better description of nuclear dipole excitation and decay of dipole states, as well as simple calculation of the position of the giant resonance, its width, and the total photoabsorption cross sections. Also the various branches of photoabsorption and the character of the energy spectra of the photoproducts can be described. The model is based on the experimental fact that all nuclei possess narrow energy bands of dipole absorption (giant resonance). The wave function of the nuclear dipole state is $\Psi_{\text{dip}} = (N [\Psi_0])^{-1/2} \Psi_0$. The dipole-state generating operator

Card 1/4

Relationship between the collective ...

S/056/62/042/001/041/048
B102/B108

is given as the sum of proton and neutron single-particle operators:

$$D = \sum_{i_p, i_p'} \left(e \frac{N}{A} \right) a_{i_p'}^\dagger \langle i_p | r | i_p' \rangle a_{i_p} + \sum_{i_n, i_n'} \left(-e \frac{Z}{A} \right) a_{i_n'}^\dagger \langle i_n | r | i_n' \rangle a_{i_n}. \quad (3)$$

$a_{j_p}^\dagger$ and a_{j_p} are the proton production and annihilation operators, $a_{j_n}^\dagger$ and a_{j_n} are the neutron single-particle states. $\Psi_{\text{dip}} = \sum_{\lambda} \alpha_{\lambda} \Phi_{\lambda}$. The α_{λ} are proportional to the single-particle matrix elements of the electric dipole moment $\langle \hat{d} \rangle_{\lambda}$. The energy of dipole excitation is obtained as

$$E_{\text{dip}} = \frac{\sum E_{0\lambda} |\alpha_{\lambda}|^2 + 2 \sum \alpha_{\lambda}^* \alpha_{\lambda'} E_{0\lambda} V_{\lambda\lambda'} + \sum \alpha_{\lambda}^* \alpha_{\lambda'} V_{\lambda\lambda'} V_{\lambda'\lambda''}}{\sum E_{0\lambda} |\alpha_{\lambda}|^2 + \sum \alpha_{\lambda}^* \alpha_{\lambda'} V_{\lambda\lambda'}}. \quad (11),$$

since $E_{\text{dip}} = (1/\bar{E}) \langle \Psi_{\text{dip}} | (\hat{H} - E_0)^2 | \Psi_{\text{dip}} \rangle$, where \bar{E} is the mean energy of the dipole state, $E_0 = \langle \Psi_0 | \hat{H} | \Psi_0 \rangle$. The total photoabsorption cross section is $\sigma_{\text{abs}} \sim E_{\text{dip}} \sum_{\lambda} |\langle \hat{d} \rangle_{\lambda}|^2$, the corresponding expression in the

Card 2/4

31017

S/056/62/042/001/041/048

B102/B108

Relationship between the collective ...

single-particle model is $\sigma_{abs} \sim \sum_{\lambda} E_{o\lambda} |\langle \hat{d} \rangle_{\lambda}|^2$. The present model explains the major part of the fast photoprotons in the photodisintegration spectrum as resulting from the superposition of low single-particle states over the dipole state. The width of the giant resonance is

$$\Delta^2 = (1/E) \langle \Psi_{dip} | (\hat{H} - E_0 - E_{dip})^2 (\hat{H} - E_0) | \Psi_{dip} \rangle = \frac{\langle \Psi_{dip} | (\hat{H} - E_0)^2 | \Psi_{dip} \rangle}{\langle \Psi_{dip} | \hat{H} - E_0 | \Psi_{dip} \rangle} - (E_{dip})^2. \quad (15)$$

so that

$$\Delta^2 = \frac{1}{2} \frac{\sum E_{o\lambda} E_{o\lambda'} (E_{o\lambda} - E_{o\lambda'})^2 |\alpha_{\lambda}|^2 |\alpha_{\lambda'}|^2}{|\sum E_{o\lambda} \alpha_{\lambda}|^2}, \quad (16)$$

if $V_{\lambda\lambda'} = 0$. For $V_{\lambda\lambda'} \neq 0$ and $E_{o\lambda} = E_{o\lambda'} = \text{const}$, $\Delta = 0$. The formulas obtained are applied to calculate E_{dip} and σ_{abs} for O^{16} , Ca^{40} , Pb^{208} and C^{12} . The results are compared with those of exact calculation and with experimental data. Agreement is very good. V. G. Neudachin, V. G. Shev-Card 3/4

24017

Relationship between the collective ...

S/056/62/042/001/041/048
B102/B108

chenko, and N. P. Yudin are thanked for discussions. There are 1 figure, 2 tables, and 9 references: 3 Soviet and 6 non-Soviet. The four references to English-language publications read as follows: J. P. Elliott, B. H. Flowers. Proc. Roy. Soc. 242, 57, 1957; D. M. Brink. Nucl. Phys. 4 215, 1957; G. Brown, M. Bolsterly. Phys. Rev. Lett. 3, 472, 1959; E. Fuller, E. Harward. Intern. Conf. on Nucl. Structure, Kingston, Canada 1960; R. Summers-Gill et al. Canad. J. Phys. 31, 70, 1953.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University)

SUBMITTED: August 19, 1961

Card 4/4

ACCESSION NR: AP4024061

S/0048/64/028/002/0359/0370

AUTHOR: Balashov, V.V.; Boyarkina, A.N.

TITLE: Quasielastic scattering of fast protons by light nuclei with knock-out of deuterons [Report, Thirteenth Annual Conference on Nuclear Spectroscopy held in Kiev 25 Jan to 2 Feb 1963]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.2, 1964, 359-370

TOPIC TAGS: quasielastic proton scattering, elastic proton scattering, scattering by light nuclei, scattering reaction, light nuclei, p shell nuclei, knock-out reaction, nucleon cluster, deuteron yield, deuteron knock-out

ABSTRACT: In a previous study (Zhur, eksp. i teor. fiz. 43, 117, 1962; Nucl. Phys. 38, 629, 1962) the authors discussed the possibility of a "spectroscopic" approach (approach based on analysis of partial transitions) to description of the processes of quasi-elastic scattering of fast protons by light nuclei with knock-out of one nucleon. It was shown, using the example of the $N^{14}(p, 2p)C^{13}$ reaction, that, using shell model wave functions for the ground and excited states of the nuclei, one can characterize in detail the excitation energy spectrum of the residual nucleus in agree-

Card 1/3

ACCESSION NR: AP4024061

ment with experiment. Recently, K.Dietrich (Phys.Letters 2,139,1962) carried out analogous calculations for a number of other 1p shell nuclei. The present study is an attempt to apply the same "spectroscopic" approach to description of reactions with emission of complex nucleonic clusters. The simplest of these, of course, are deuterons. In view of the fact that the available experimental data on knock-out of fast deuterons in the process of quasielastic scattering are extremely scanty, the purpose of the present calculations is not so much to compare theory with experiment as to arrive at some general conclusions and inferences that may prove useful in planning and checking future experiments. The consideration is restricted to 1p shell nuclei and there are considered only states with a complete 1s shell. The calculations are carried out in the framework of the shell model, taking into account nucleon correlations and the requirement for commutative symmetry of the functions, following from the Pauli principle. Thus the lightest nuclei ($A = 5$ to 7) are described in the framework of the theory of supermultiplets, heavier nuclei - in the framework of the intermediate coupling approximation. The radial single-particle wave functions are assumed to be oscillator ones. All the characteristics of the reactions are calculated in the momentum approximation in which the principal reaction mechanism is knock-out of a deuteron by the incident proton. (A competing process, involving knock-out with the initial spin is mentioned, but in view of the

Card 2/3

ACCESSION NR: AP4024061

lack of any valid information on the characteristics of this process and certain other factors, it is neglected.) Following derivation of the appropriate formulas there are computed the deuteron distribution in momentum parameters for proton reactions on Li^6 , Li^7 , Be^9 , Cl^{35} , N^{14} and O^{16} , and the resultant values are compared with what experimental data are available. In many cases the agreement is satisfactory. In general, however, the available experimental data, as noted above, are still too scanty for adequate comparison with theory. Some recommendations are made concerning possible modifications of present experimental techniques aimed at obtaining results that will be more revealing from the theoretical standpoint. "The authors are grateful to V.G. Neudachin and Yu.F. Smirnov for discussions." Orig.art. has: 18 formulas, 7 figures and 5 tables.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 08Apr64

ENCL: 00

SUB CODE: NS

NR REF SOV: 004

OTHER: 008

Card 3/3

S/056/62/042/005/035/050
B102/B138

AUTHORS: Balashov, V. V., Belyayev, V. B., Zakhar'yev, B. N.

TITLE: Dipole excitations of nuclei according to the superfluid model

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 5, 1962, 1365-1370

TEXT: The superfluid model has proved to be one of the best to explain nuclear peculiarities. Now it is used to investigate the possibilities of dipole excitations. The dipole state of a nucleus is considered as a superposition of a great number of two-quasiparticle excitations. The energy of this state is virtually unchanged by taking account of nucleon pairing in comparison with the values obtained in the single-particle model. These estimates (Wilkinson model) yield, however, far too low values of the giant resonance of photoabsorption. The dipole energy can be raised by introduction of dipole-dipole interaction, in addition to the pairing-type interaction. It is shown that the effects of collective intensification of dipole transitions and the presence of an

Card 1/3

Dipole excitations of nuclei ...

S/056/62/042/005/035/050
B102/B138

energy shift of the dipole state with respect to the single-particle value are caused by nucleon correlations of dipole-dipole type. Long-range correlations of other multipolarity contribute to the dispersion of the dipole excitation. The increase in dipole excitation energy is proportional to the number of states in the last filled shell. In agreement with the shell model this effect is fundamental for heavy nuclei and unimportant for light ones. Pairing-type excitations have only a weak effect on the dipole excitation. It raises the energy of the dipole state only to the extent required for a destruction of the pairs. The contribution of pairing to the dispersion of the dipole excitation is of the order of c^2 . The results indicate the direction of further development of the shell model of the giant resonance in deformed nuclei (S. G. Nilsson, B. R. Mottelson, Nucl. Phys., 13, 281, 1959). Allowance for pairing does not eliminate the main disadvantage of the model, the far too low value of giant resonance. This can be done by considering the non-diagonal dipole-dipole interaction between Nilsson-type single-particle states. Results of this will be published in later papers. N. P. Yudin is thanked for discussions. There are 2 figures and 1 table.

Card 2/3

Dipole excitations of nuclei ...

S/056/62/042/005/035/050
B102/B138

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo
universiteta (Institute of Nuclear Physics of Moscow State
University)

SUBMITTED: December 23, 1961

Card 3/3

S/056/62/043/001/018/056
B102/3108

AUTHORS: Balashov, V. V., Boyarkina, A. N.

TITLE: quasielastic scattering of fast protons and the spectrum of hole excitations in the N^{14} nucleus

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 1(7), 1962, 117 - 120

TEXT: The authors calculated the hole excitation spectrum for the fast-proton induced reaction $N^{14}(p, 2p)C^{13}$. The investigation was aimed to find out if the levels $1/2^-$, $3/2^-$ and $5/2^-$ do exist and why they have not been discovered up to now. The calculations were carried out on the basis of the model of intermediate coupling, taking account of the correlation between the nucleons and using Kurath's data for central and spin-orbital forces (Phys. Rev. 101, 216, 1956). The C^{13} level excitation probabilities are shown in the level scheme (Fig. 1). The excitation curve is constructed. Agreement with experimental data (Nucl. Phys. 7, 10, 1956) is very good. The levels investigated have not yet been observed in (nC^{12}) scattering experiments because their reduced width is very small and their Card 1/8 2

quasielastic scattering ...

S/056/62/043/001/018/056
B102/B108

de-excitations are forbidden. These levels have to be investigated in α - γ transitions induced by pickup reactions, as e. g. (T, α) or (He^3, α) . It is pointed out that in many light nuclei such abnormally stable super-threshold states might exist; their stability is due to the special forbiddenness of their deexcitations. There are 2 figures and 5 tables.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University)

SUBMITTED: December 23, 1961

Card 2/02

S/056/62/043/001/032/056
B104/B102

24.7000

AUTHORS:

Balashov, V. V., Chernov, V. M.

TITLE:

Effect of phonon excitations of a nucleus on the characteristics of giant resonance in photoabsorption

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 1(7), 1962, 227 - 229

TEXT: The effect of surface (phonon) excitations of a nucleus on the position and width of the collective dipole state is studied. It is assumed that a unique photoabsorption shell level exists and that this level is connected with a unique single-phonon state by particle-surface interaction. It is shown that phonon excitations are one of the principal causes of "friction" accompanying p-n dipole oscillations of nuclei. From a Pb^{208} nucleus it is deduced that (1) the phonon excitations of the nucleus do not affect the position of the giant resonance in photoabsorption; and (2) the consideration of phonon excitations is essential for determining the width of giant resonance. These excitations make a contribution to the dispersion of the dipole state in the order of

Card 1/2

JA

Effect of phonon excitations...

S/056/62/043/001/032/056
B104/B102

the square coupling constant of the particle with the nuclear surface.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo
universiteta (Institute of Nuclear Physics of the Moscow
State University) JA

SUBMITTED: February 13, 1962

Card 2/2

S/056/62/043/002/046/053
B108/B102

AUTHORS: Balashov, V. V., Tulinov, A. F.

TITLE: Giant resonance of spin wave excitation in atomic nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
no. 2(8), 1962, 702-705

TEXT: In inelastic scattering of fast protons from light nuclei a characteristic peak similar to the giant resonance peak in photoabsorption has been observed. The fundamental properties of the collective spin wave excitations causing such resonance have been studied. Besides, also an optical giant resonance appears. The giant resonance of nuclear spin wave excitation is more smeared out than the optical resonance. This gives some insight into why the width of the inelastic scattering peak is usually greater than the width of the photoabsorption curve. There are 2 tables. ✓

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University)

Card 1/2

Giant resonance of spin wave ...

S/056/62/043/002/046/053
B108/B102

SUBMITTED: March 31, 1962

Card 2/2

14237

S/056/62/043/006/040/067
B183/B102

26.2246

AUTHOR: Balashov, V. V.

TITLE: Mechanism of inelastic scattering of γ -quanta from nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
no. 6(12), 1962, 2199 - 2203

TEXT: When deep hole states are excited by E2 absorption of γ -quanta, de-excitation occurs in several steps, i.e., most of the γ -quanta are not elastically scattered. This is due to the shell structure of the nucleus. An analysis of the corresponding inelastic scattering of γ -quanta in the 20-Mev region shows that the nuclear shell structure can be confirmed in this way up to very high excitation energies. For all nuclei the $(\gamma\gamma)$ reaction delivers two maxima of the effective cross section as a function of the excitation energy. The first maximum can be explained by excitation on related levels near the threshold. The second, which occurs at about 20 Mev, has no satisfactory theoretical explanation at present. It is a phenomenon of resonance in the absorption and emission of γ -quanta. According to the statistical nuclear model the second maxima, if due to

Card 1/3

Mechanism of inelastic scattering...

S/056/62/043/006/040/067
B183/B102

giant resonance, should be expected at 14 - 17 Mev. Based on the model of independent particles the following can be stated: In the case of E1 transitions, the residual dipole-dipole interaction between nucleons leads to a giant-resonance energy shift toward higher energies amounting to about 1.5 times the single-particle shift. It is assumed that the quadrupole-quadrupole component of residual interaction plays a similar role not fully clarified. Its effect in E2 absorption is weaker than that of the dipole-dipole interaction in E1 absorption and of opposite sign. The single-particle model leads automatically to the occurrence of the ~20 Mev group of excited levels in E2 absorption of γ -quanta which is characterized by anomalous stability against nucleonic decay. The radiative decay of such states is studied here. After E2 absorption, only some of the de-excitations of the proton to the initial level occur directly. There is much greater probability of E1 cascade transitions (inelastic scattering). A certain percentage of these transitions leads to isomeric states. The example of the $^{115}_{49}\text{In}$ nucleus supplies a rough quantitative picture. Out of 23 mb-Mev for the differential total absorption cross section, about 19 come to inelastic scattering to the ground state, 4 to isomeric yield, and less than 0.5 mb-Mev to elastic scattering. The one-particle model is

Card 2/3

Mechanism of inelastic scattering...

8/056/62/043/006/040/067
B183/B102

unsatisfactory as it takes no account of tunnel effects and of a number of factors that increase the isomeric yield. A rigorous theory of inelastic scattering seems hardly practicable at present. There are 3 figures and 1 table.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of the Moscow State University)

SUBMITTED: June 30, 1962

Card 3/3